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Geol Survey

A TOUR OF

ILLINOIS CAVERNS

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Welcome to the Illinois Caverns State Natural Area! Begin your visit by checking in at the Site Interpreter's office and signing a cave exploration permit. Illinois Caverns is a wild, undeveloped cave, and all visitors are required to wear hard hats, leather boots, and protective clothing and to carry three battery-powered lights and extra batteries.

Remember, all natural geological and biological materials in the cave are protected by law. Nothing in the cave should be disturbed or damaged in any way. Littering, drinking alcohol, and smoking in the cave are strictly prohibited.

This map highlights selected features you will see on your self-guided walking tour. Times (in parentheses) indicate the approximate time for a group of about 15 school-age children walking downstream from the entrance to reach each location. We recommend that children of grade-school age and younger not go beyond Capitol Dome because of the time involved and the strenuous nature of the journey. Experienced cavers should divide the indicated times by 4. Presently, not all areas within Illinois Caverns are owned by the State, and you should consult the Site Interpreter to find out which locations require permission to enter. A more detailed description of the cave can be found in the companion document, *A Field Guide to the Illinois Caverns State Natural Area*.

Entrance Walk along the trail to an average-size sinkhole, the rim of which surrounds the cave entrance. The entrance originated as a fracture in the limestone bedrock. Slightly acidic rainwater percolating down through the soil and into underlying bedrock slowly dissolved the walls of the fracture, eventually creating a sinkhole that funneled soil and runoff into the enlarging fracture. The drop from the rim of the sinkhole to the floor of the cave is 110 feet. The concrete steps into the cave are steep, and for your safety and that of others on the stairs below you, use the handrails while descending into the cave. This is the only human-size opening into and out of the cave.

Acclimation to the Cave Environment As you step away from the foot of the entrance stairs, taking care not to fall into the stream, stand in the adjacent darkness for at least 5 minutes so your sun-drenched eyes have time to adjust to the very low light conditions. Once in the cave, you are completely surrounded by limestone bedrock of the Mississippian Period (360 to 320 million years old). The bedding or layering that is visible in the limestone formed because of minor, probably weather-related, events during deposition of the original calcareous ocean sediments. More recent, fine-grained sediments that were washed into the cave can make the trail adjacent to the stream very slippery.

The Stream The stream is an excellent means of orienting yourself. On this tour, you initially travel downstream in the cave, and you need only travel upstream to find your way back to the entrance. The stream flows through Illinois Caverns year-round and is fed by groundwater draining from bedding planes and crevices in the adjacent bedrock and from surface runoff entering sinkholes. During periods of high rainfall, runoff from the surface rushes into sinkholes, some of which are connected directly to the passages of Illinois Caverns. If this occurs, **flash flooding within the cave is possible**; the Site Interpreter will close the cave if such conditions are likely. The cave stream is a habitat for the variety of microscopic and macro-

scopic aquatic life including fish, amphibians (frogs and salamanders), and tiny shell-bearing organisms referred to as amphipods, ostracods, and copepods. Accidental inhabitants, those organisms that fall or get washed into the cave through a sinkhole, may also live in or near the cave stream.

Canyon Passage (20 minutes) The Canyon Passage begins with a noticeable narrowing of the cave just before the first waterfall. The passage is tall, narrow, and winding, which indicates that it formed by the action of flood waters (with an air space above them) cascading down the passage, preferentially dissolving and abrading the floor.

The First Waterfall (24 minutes) This small waterfall has a vertical drop of about 3 feet into a plunge pool. A pothole, a bowl-shaped depression in the rock, can be seen near the falls. The adjacent small upper passage is a remnant of a branch of the cave stream that was abandoned tens of thousands of years ago. Flowstone can be seen at both ends of the upper passage.

Protocave A sinuous, concave-up channel can be seen in some places on the cave ceiling, especially along the Canyon Passage. This feature is part of an anastomosis tube—or rivulet—a pathway between limestone beds that developed into a larger conduit about 4 inches in diameter. In some parts of the cave, these features have enlarged to diameters of 3 feet. The original flow paths are preserved in the ceiling.

Ladders (40 minutes) Located near the end of the Canyon Passage is an upper passage accessible by climbing a small steel grid ladder laying at a shallow angle against flowstone. The passage is narrow, but the ceiling is about 6 feet high and contains the sinuous remnant of a protocave. The upper passage shows, first-hand, what the cave was like in its early stages of development. The passage is about 30 feet long, and you must climb down a 10-foot aluminum ladder at the other end.

Giant's Foot (56 minutes) This foot-shaped rock slab, which lies in the middle of the passage, appears to have fallen from the ceiling fairly recently. The continued development of anastomoses eventually separated the slab from the ceiling, causing it to fall. The estimated weight of the slab is about 3,000 pounds. You can feel a set of anastomoses on its underside.

T-Junction (60 minutes) Emerging from the Canyon Passage is an intersection called the T-Junction. Here, the passages widen, and you may follow the passage to the right or to the left. To the right, a small slope of fine sediment leads to the relatively dry and well-decorated upper passage known as the Lunch Room.

Lunch Room The Lunch Room passage, which is a dead end, contains abundant stalactites, stalagmites, flowstone, rimstone pools, and spectacular chimneys. A cave stream, visible through holes in the floor at various locations, is a tributary of the main stream that is creating additional cave passages beneath the Lunch Room floor. The passage of the Lunch Room that extends to the south is dangerous because of large, deep holes in the floor. Visitors are discouraged from entering this area.

Main Passage To the left of the T-Junction is the main part of the cave, which contains abundant speleothems. As you enter the main passage, you may notice that one of the several large columns has been undercut by the stream. The stream dissolved the rock supporting the column, which now hangs over the stream. Farther on, another column that broke from the ceiling lies at about 20 degrees from its original vertical orientation. The material originally beneath the fallen column probably was undercut on one side by the stream, causing the column to break free from the ceiling and collapse. Later deposition of flowstone appears to have stabilized the column.

Mushroom Passage (72 minutes) Ducking beneath an upper passage, you enter the Mushroom Passage, so named because of

the mushroom-shaped formations made of flowstone. The flowstone grew out over the stream; when the stream level dropped due to deepening of the cave, the flowstone remained, suspended above the floor, forming mushroom-like projections.

Capitol Dome (100 minutes) The dome-shaped stalactite-stalagmite complex known as Capitol Dome formed on a breakdown pile (from ceiling collapse). Fine-grained, flood-deposited sediment covered the breakdown, and speleothems and flowstone were deposited on top of them. One of those speleothems was Capitol Dome; another is the large stalagmite just behind Capitol Dome. This actively growing stalagmite and the small stalactites above it show what Capitol Dome probably looked like early in its development.

Cascade Canyon (140 minutes) This side passage empties a steady flow of water into the main passage. The canyon-like passage consists of a series of rimstone pools that formed when agitation and resultant degassing of carbon dioxide from the water along the original riffles of the stream caused calcite to be deposited. The original sites of the riffles and pools are now marked by calcite dams and deeper pools. The presence of the rimstone pools reveals that the water in the stream is saturated with the mineral calcite.

Chimney Dome Passage (160 minutes) Chimneys are ceiling features common to large caves and consist of vertical shafts that extend upward toward where the soil and rock meet. They form when soil water, enriched in carbon dioxide from the soil zone, rapidly seeps into the cave along a vertical fracture and dissolves a silo-shaped pathway.

Rimstone River (180 minutes) Rimstone River is the longest side passage with an associated stream in Illinois Caverns. A series of rimstone pools similar to those in Cascade Canyon is present, but the passage is much wider.

Breakdown Room (200 minutes) The Breakdown Room (one of two in the cave), one of the widest rooms in Illinois Caverns, formed when portions of the cave ceiling collapsed. The size of the room and the presence of breakdown are not a coincidence. As the passage widened, it created a broad expanse of ceiling, which caused the ceiling to sag. Because limestone beds are relatively thin and lack support, the sagging limestone slabs broke away from the ceiling.

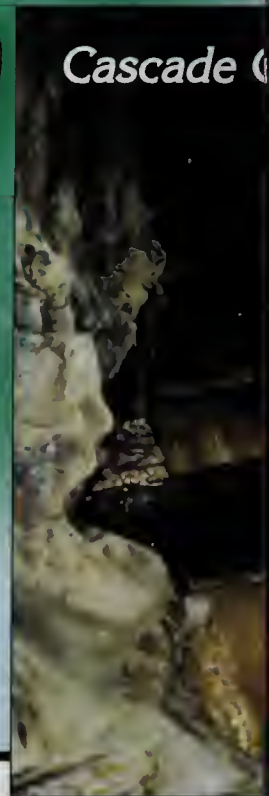
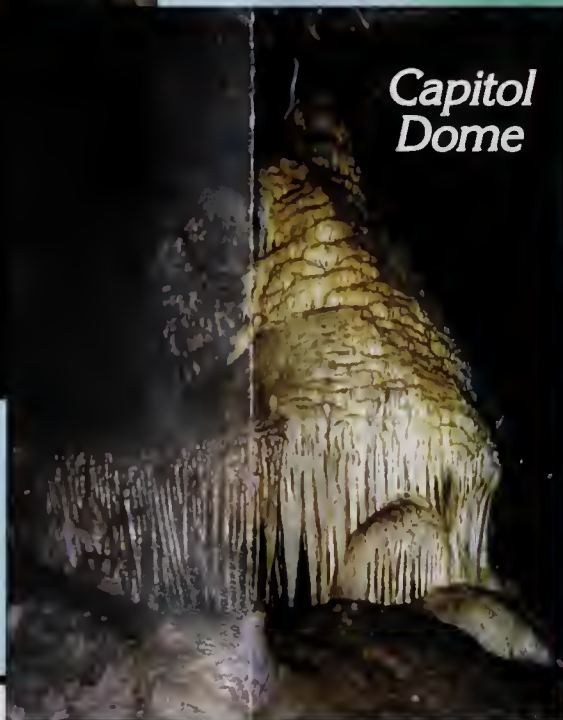
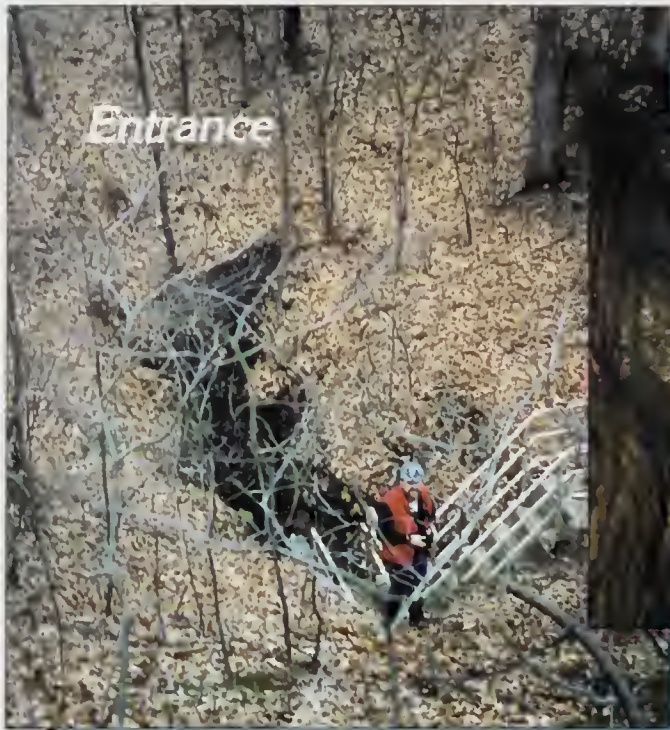
Waterfall (220 minutes) The waterfall formed on a resistant chert layer in the limestone. This layer, typically light to medium brown in this area, is black here because of a coating of manganese oxide.

Rock Falls (280 minutes) Rock Falls is a flowstone apron that extends out over the cave stream and probably grew out over the then higher and deeper stream during wetter climatic conditions. The stalactite-like falls formed after the water level dropped.

The Dragon (360 minutes) The Dragon formed when a small column tipped almost sideways, possibly from undercutting or slumping of the relatively soft sediment under it. This feature gets its dragon-like appearance from small stalagmites, which grew onto what is now the Dragon's "back."

The Rest of the Cave It is recommended that all tours stop at The Dragon. Beyond The Dragon lies the Water Passage, which has relatively deep water; the water eventually disappears at the Sand Crawl, which has a vertical clearance of about 2 feet. The cave ends in a sump at the end of a mud-filled crawl known as The Sewer. The water from the cave eventually discharges at a spring, known as Dye Spring, located in a wooded area about 2 miles southeast of the entrance. The spring feeds into a small stream that flows to the Kaskaskia River and then to the Mississippi River.

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Shroom Passage



Chimney Dome Passage



The Dragon



Ammander



Rock Falls



Hidden Passage

Waterfall

Water Passage

The Dragon

Rock Falls

*Waterfall
Breakdown Room*

Breakdown Room



Sand

Crawl

bat



0 300 m

0 500 1000 ft

cave width exaggerated 10x

→ stream flow

To Sump

nyon

Rimstone River



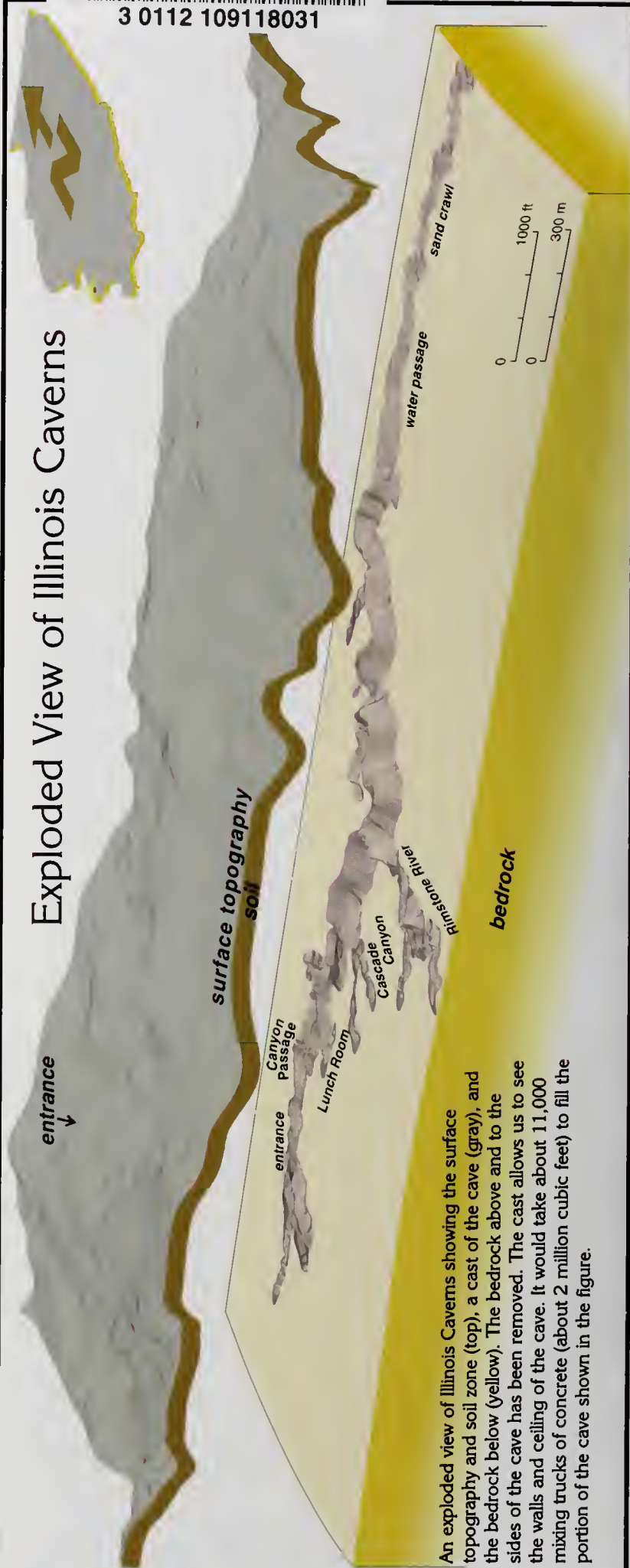
Dye Spring





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Exploded View of Illinois Caverns



An exploded view of Illinois Caverns showing the surface topography and soil zone (top), a cast of the cave (gray), and the bedrock below (yellow). The bedrock above and to the sides of the cave has been removed. The cast allows us to see the walls and ceiling of the cave. It would take about 11,000 mixing trucks of concrete (about 2 million cubic feet) to fill the portion of the cave shown in the figure.